

Military Unique Graduate Medical Education Program Anesthesiology



Introduction:

The future of military medicine depends upon our ability to produce a unique product; a more capable, flexible medical professional who will perform the mission under any and all conditions, peacetime or war. Today's military is being asked to deploy in an increasing range of operational scenarios. Rather than a reduced schedule to match the rapid downsizing, the operational tempo has dramatically increased and military medical departments are deploying alongside to provide healthcare support in a wide variety of situations.

Military medicine is faced with three competing imperatives. We must learn to balance the very different requirements of peacetime healthcare, humanitarian missions and combat support operations, each of which has a unique mix of personnel, equipment and medications. These tasks, while competing, do not stand in isolation. Indeed, none can exist without the others. Like legs of a three-legged stool, they support each other and combine to make a stable platform. Training and care provided in one area is intricately linked with and ultimately enhances the ability to provide care in all aspects of our healthcare system.

Military medical readiness is more than being fit or putting on a uniform. Medical readiness implies the ability to perform any mission, anytime, anywhere. First and foremost, our job is to keep the fighting forces healthy, fit and ready to go to war. If that can be better achieved through the civilian healthcare system, military medicine can pack its bags and go home. We know historically, however, that as soon as our troops deploy, we will be alongside, providing both immediate and ongoing medical care, working to prevent illnesses and standing by to provide combat casualty care. To be 'ready', military medical professionals must be, first and foremost, competent in their chosen field. In addition, they must have 3 elements of training above and beyond that of their civilian counterparts. These include:

- 1) Specialized medical training in such areas as Weapons of Mass Destruction (WMD), field sanitation, 3rd world endemic diseases and the like.
- 2) Operational experience/exposure so they understand the environment and conditions under which they will work. What drugs and equipment do they have and what don't they have? How do they handle austere conditions in the field, aboard ship or in a host nation hospital? How does one overcome poor communications, limited triage and transport capabilities and what unique threats must be considered? Our providers must understand their capabilities and their limitations.
- 3) Doctrinal training so they understand the system under which they work; why they are there and how they operate in conjunction with their line counterparts. Further,

there must be some understanding of working within a joint environment, not only with our sister services, but with host nations, governmental and non-governmental organizations, allies, coalition partners, etc.

The following suggestions are limited to the field of Anesthesiology but are based on the premise that the areas covered under Unit 1, Military Unique Curriculum of 1 July 1989 are covered elsewhere. They are further based on the premise that the military anesthesia provider will be sent in harms way, under austere conditions with limited drugs, equipment and support personnel. There may or may not be power available. The only certainty is that there will be patients to care for and hard choices to make. Remember! This is Not, I repeat, Not Tertiary Care!

I. Baseline

Each anesthesia provider will be in or have graduated from an approved training program and should complete or have completed the following courses. Advanced Cardiac Life Support (ACLS), Advanced Trauma Life Support (ATLS) or Trauma Nurse Core Course (TNCC) and the Combat Casualty Care (C4) or Bushmasters Course. An equivalent level of operational experience may be substituted in some cases. Additionally, personnel should be familiar with their operationally assigned platform, the available equipment, drugs, support personnel and operating conditions under which they will be working. A member should have a working knowledge of their own service's doctrine and have had at least an introduction to joint concepts and operations.

II. Cognitive Objectives

The resident/provider should be able to demonstrate the knowledge of:

Regional Anesthesia: The appropriate use of regional nerve block techniques to extend capabilities in a mass casualty situation or to minimize risk in austere environments.

IV Anesthetics: Techniques for both regional and general IV anesthetics would be covered. Emphasis will be placed on how to extend capabilities under austere conditions and the risks/benefits to these types of procedures.

Spontaneous Ventilation: Increase familiarity and use of this technique. Discuss when to use it in the field to avoid the need for ventilators, increase safety and extend capabilities.

Nuclear/Biological/Chemical: Beyond baseline knowledge provided to all military members, the unit would cover such things as chemical interactions with anesthetics, management within contaminated environments and an understanding of the limitations imposed by the operational scenarios.

Environmental Factors Affecting Equipment: Heat, cold, pressure, dirt, sand and other environmental factors may affect the ability to utilize certain types of equipment and may

require modification of equipment or techniques. How to avoid or circumvent these problems would be covered.

High Altitude Physiology/Pressure Alterations/Transport Medicine: Providers should understand the concept of critical care transport in the air and problems encountered if they are assigned as a member of the crew. Discuss joint interoperability to ensure smooth evacuation of patients. Understand the effects of pressure on physiology and on equipment. Providing care at altitude and the equipment alterations one might experience would be covered.

Compression/Decompression Illness And Injuries: This does not imply expertise in all aspects of diving medicine but a familiarity with the environment and types of injuries one might see. Familiarity with hyperbaric chamber operations would be covered here. What drugs may have altered effects under pressure? How do you keep someone paralyzed and/or sedated in a chamber when necessary? If a patient is intubated, are there ventilators that can be used in a pressure environment?

Universal Precautions in Austere Environments: Universal precautions are not military specific but austere environments present unique challenges that may need to be addressed. This might be better placed within Unit 1 as a basic lecture applicable to all physicians/providers.

Sterilize/Decontaminate Non-Disposable Equipment: This would emphasize techniques available in austere environments, 3rd world hospitals, operations other than war and forward echelons of care, as well as how to avoid unnecessary equipment usage from the start. This concept is not militarily unique but field methods are not routinely taught.

Cold Injuries: Recognition, management and disposition in a field environment.

Drowning/Near Drowning: Recognition, management and disposition in a field environment. Differences between a fresh and salt water drowning will be covered.

Heat Related Illnesses: A thorough understanding of heat stress, including the management of heat stroke in austere conditions is important. This might be included in Unit 1 as well but, in severe cases, the anesthesiologist may well be called in to manage and should be particularly aware of these issues.

II: Skill Objectives:

The resident/provider should be able to demonstrate the skill or use of:

Field Ventilators, Monitors And Other Unique Equipment: Understand and be familiar with currently available field gear and their appropriate use.

Anesthesia Field Machines: Be trained in both the theory and use of all currently available field anesthesia machines including the 885A, the PAC drawover vaporizer and others as they come on line. A current list of all machines would be kept at all training programs and a protocol established to train all providers on currently authorized machines. This may combine the use of simulators or live patients and the list would change as new machines replace old.

Vapor Anesthesia Without Nitrous Oxide: Nitrous is likely not to be available in many operational scenarios and providers must be proficient at delivering an anesthetic without using nitrous oxide as an adjunct.

Combat Trauma Training/Perioperative Management of the Trauma Patient: A trauma rotation should be mandatory to understand trauma triage and management. This will be enhanced by a combined hands on and didactic program to emphasize military type injuries and the mass casualty trauma triage and thought processes. Mass casualty management will be included here.

Burn Injuries: Each resident should have a rotation in burns to understand the unique requirements and types of burns that may be seen. Acute management, risks, warning signs and later management would be covered. This would be a combination of cognitive and hands on skills.

Equipment Modifications/Utilization: Available gas supplies may require conservation of Oxygen. How could one set up a ventilator to be driven off compressed air instead? What are the risks and benefits? How can I use available supplies to maximum benefit? What portable gear might I have available? Issues such as these would be addressed.

III. Areas deleted from previous list due to inclusion under the basic Unit 1 or due to being more applicable to other specialties.

Stress reduction techniques: Included elsewhere

Tube thoracostomy: Included with ATLS

The traditional areas of perioperative trauma management should be taken care of during the trauma rotation and we get ongoing training in consultative skills.

References to consider:

Handbook of Emergency War Surgery
Military Textbook Series
Regional Anesthetic Phamplets/books
Management of NBC Casualties program on CDROM